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THE RYE-HOUSE.

[The Rye-House.]

To the disciples of Izaak Walton, the house represented in the above engraving is well known, as marking a spot where they are sure to find good employment for their angle; but it has obtained a more extended celebrity from its being the house in which the conspirators, who intended, it was said, to have murdered Charles II. on his road from Newmarket, were to have assembled to put their plans in execution.

The Rye-House is situated on the River Lea, near its junction with the Stort, and contiguous to the village of Hoddesdon in Hertfordshire. It is on the east bank of the river, but at a short distance from it; an alehouse, which has adopted the well-known name of the building, being situated south of it, on the side of the road to Stansted Abbots and Harlow. This alehouse has been from time immemorial the favourite resort of London anglers when the Lea has been the scene of their operations; and it is doubtless to this that the cheerful Izaak alluded when he speaks of the "honest alehouse, where we shall find a cleanly room, lavender in the windows, twenty ballads stuck about the wall, and a hostess both cleanly, handsome, and civil." The house, however, now is altogether modern; but still maintains its character for cleanliness and civility.

The only portion of the Rye-House now standing is an embattled gate-house, built of brick and ornamented with a handsome stone Gothic doorway. This was formerly used as a workhouse for the poor of Stansted, in which parish it is situated, and it is still inhabited by some of the old women who occupied it before the Poor Law Amendment Act rendered it necessary to provide other accommodation for the paupers of the union in which the parish of Stansted is included. The chimneys of that portion of the house still remaining are very curiously constructed; and at one of the angles of the building there is a turret with an ancient winding staircase in the interior.

The house and grounds forming the manor of Rye formerly occupied considerable space, which was surrounded by a moat, since partly filled in, so that it formed a small island, and was accordingly sometimes named the Isle of Rye. The house was built in the reign of Henry VI., by Andrew Ogard, to whom the king granted a licence to impark the whole, consisting of 85 acres.

In the time of Elizabeth it was occupied by Sir Edward Baest, 'surveyor-general of her Majesty's victuals for the seas;' and from him it came into the possession of Edmund Fielde, Esq., in whose family it still remains.

At the time when it was to have been used for the purposes of the 'Protestant Plot' of 1683, it was tenanted by a man of the name of Rumbald, a maltster, who, it was alleged, was to have secreted the conspirators in his house and afford them an opportunity of retreat after their purposes had been effected.

The intent of the conspirators, according to the information of Josiah Keyling, a salter, was to waylay the king, on his return from Newmarket, and to shoot both

him and the Duke of York, who was expected to accompany him. The manner of doing it was proposed to be thus:—Rumbald's house being by the highway-side, the undertakers were to hide themselves under a wall or pale; and when his majesty's couch came opposite to them, three or four were to shoot with blunderbusses at the postillion and horses; and if the latter did not drop, two more of the party, dressed like labourers, were to rush out of a lane near the place with an empty cart, which they were to draw athwart the way, in order to stop the horses, while several others of the gang fired on the king and his guards. For this purpose they were to provide "six swan-quills, twenty goose-quills, and twenty or thirty pair of crow-quills" (meaning in their plot-jargon so many blunderbusses, muskets, and pistols), with "ink and sand" (powder and bullets) in proportion. The maltster, however, went down to his house at Rye without any of his associates, without arms, or any actual preparation; and whilst he was there the king and duke passed close by his house on their way to London with only five of the Life Guards; so that the king would have fallen an easy prey to them had they been prepared for him. The king's unexpectedly early return was, it is said, owing to a fire having broken out in his apartments at Newmarket; but it is more than probable that had he waited until the time at which he was expected, he would have passed uninjured, as there is every reason to believe that the whole accusation was false, and that, like many of the previous Popish plots, as they were called, it was got up by some of the more unhesitating and violent adherents of a party, and with the most reckless false swearing and perversion of the truth. The imagination of the witnesses in this case procured every day some fresh impeachment, and when the malice of the Popish party had secured the condemnation of their humbler victims, they gradually brought their foul suspicions to attach to the most noble characters. It was on a charge of aiding the conspirators in this pretended plot that those high-minded patriots Russell and Sydney were tried and convicted, against the evidence produced, and in defiance of all legal right. Rumbald, the maltster, escaped at the time, but was subsequently taken when accompanying the Duke of Argyle in his landing in Scotland in 1685, and suffered a most cruel death. Although severely wounded at the time of his capture, "he was hoisted up by a pulley and hanged awhile, he was let down scarce fully dead, and his heart pulled out, and carried on the point of a bayonet by the hangman." He, however, resolutely denied the truth of the Rye-House Plot.

LACE, AND ITS MANUFACTURE.

The history of lace is a remarkable one. Thirty years ago was the period at which the middle and humble classes began to use productions which, though not actually lace, bore a strong resemblance to it; we mean bobbin-net. Before that period, lace, in all its forms, was the production of human labour, unaided by any machinery, except a few pins, a few little sticks, and a cushion; and the cost of production was so high, that none but the wealthy could afford to purchase the lace thus made. Since that time machines have been invented, amplified, and improved to such an extent, that a light and elegant material, answering the purposes of hand-made lace, has been brought within the reach of almost all classes of the community. It is computed that nearly thirty millions of square yards of bobbin-net are made annually in England, chiefly in the neighbourhood of Nottingham. We have given several statistical details of the bobbin-net trade in 'Penny Magazine,' vol. iii., p. 278: the present article will relate to other parts of the subject.

Beckmann has endeavoured to discover how far back the making of lace may be traced, but he could not find any details in the ancient authors to warrant the assumption that what is now called lace was known among them. There have, however, since his time, been plates of Grecian costume published, in which the female dresses are seen to be bordered with lace. The embroidered lace, or that which is worked with a needle, was more ancient than pillow-lace or bone-lace; and lace of the former kind is sometimes found among old church furniture, from which it is probable that it was the production of nuns or of pious ladies of fortune, who had time to devote to such an exceedingly slow and tedious employment. This production probably originated in Italy, and from thence was introduced into Germany and France. Beckmann attributes the invention of pillow-made lace to Barbara Uttmann, a native of Saxony, about the year 1560. The annalists of Saxony have made especial mention of this circumstance, because it was of considerable importance at the time. The mines of Saxony had become less productive than formerly, and the miners' wives, who were principally employed in making veils by the old slow method of needle-work, could scarcely earn sufficient to support them. The new method of making lace was found to be so much more rapid, that it was soon learned by all the wives and daughters of the miners, and the lace which they manufactured, on account of the comparatively low price at which it could be produced, soon became fashionable, in opposition to the Italian lace worked with the needle, and even supplanted it in commerce.

Under the ministry of the celebrated Colbert, the lace manufacture, as then practised in Brussels, was introduced into France. Count de Marsan brought from Brussels to Paris his former nurse, whose name was Dumont, and her four daughters, in 1666. These were all lace-makers, and they received an exclusive right to establish and carry on the lace manufacture in Paris. In a little time Dumont and her daughters collected more than two hundred females, many of whom were of good families, who produced such excellent work, that it soon acquired a reputation both in France and elsewhere. It is certain that before this period the making of lace was very common in Flanders and Belgium. De Reiffenberg states that there is a series of six engravings now existing, by Martin de Vos, Dubruyn, and Londerseel, executed about the year 1580. These represent human occupations at different periods of life. In one of them is a young woman seated, with the apparatus in her lap for making pillow-lace.

Mechlin, Brussels, Valenciennes, and a few other continental towns, continued to be the principal marts for lace. During the seventeenth century there was quite a rage for this production, men as well as women wearing it in profusion: and even down to the end of the last century it was calculated that nearly ten thousand females were employed at lace-making in Brussels alone. Since that time the production of machine-made bobbin-net in England, and to a smaller extent on the Continent, has greatly reduced the amount of pillow-made lace. Valenciennes, which used formerly to be one of the chief places of its production, had not, in 1825, more than three hundred persons employed at it.

The period of the introduction of lace-making into England cannot be well ascertained, but it appears to have been somewhere about the reign of Queen Elizabeth, and to have been occasioned by the persecution of the Lollards in Flanders. Honiton in Devonshire was one of the first places at which it was carried on in England. At this town the manufacture was very flourishing in the time of Charles I. During the early part of the reign of George III., Honiton lace was much patronised by the royal family, and the manufacturers at that place employed upwards of 2400 persons in the town and its neighbourhood. By the year 1822 this number, probably on account of the increase in the bobbin-net

manufacture, had fallen to 300. What is the number of persons employed at the present time we do not know; but the recent Royal marriage has shown that Honiton lace is yet an object of demand. Generally speaking, we believe the thread employed in making Honiton lace is imported from Antwerp, the British thread being considered inferior for that purpose.

The counties in England where the manufacture of thread-lace is carried on are principally Devonshire, Buckinghamshire, and Bedfordshire. Bone-lace (as thread-lace was then called) was made at Olney in Buckinghamshire in the time of Fuller, and after that gradually extended throughout the greater part of the county. At the beginning of the present century, before the improvements in bobbin-net machinery were made, the principal scene of lace-making in Buckinghamshire was at Hanslope, but it extended fifteen or twenty miles round in every direction. In 1801, out of 1275 inhabitants of Hanslope, no fewer than 800 were engaged in this manufacture. Children were put to 'lace-schools' at or soon after five years of age. At eleven or twelve years of age they were able to earn enough for their own subsistence. Both girls and boys were taught to make lace, and even men were employed on it: it was often a good resource to men out of their usual employments, for they could earn as much at it as the generality of day-labourers. At the period of which we speak the lace made at Hanslope varied in value from sixpence to two guineas per yard.

The lace made in Bedfordshire was, for some reason or other, not of so fine a quality as that produced in some parts of Buckinghamshire; and the straw-platting, which has been carried on to a greater extent in Bedfordshire than in other counties, was generally more profitable.

British pillow-lace appears to have been at its height from 1800 to 1812. There were some very striking improvements made in the patterns about the former period, which led to a greatly increased demand, and British lace veils sold for from twenty to one hundred guineas each. About 1812, however, the competition of the bobbin-net manufacture began to be felt in earnest, and from that period pillow-lace making dwindled down to a very low ebb. Fashion may perhaps give it a temporary revival, but it is doubtful whether ever again it will be in a prosperous state.

Without professing to give a minute account of the mode of producing Brussels lace, or the kind similar to it, we may convey a few general notions respecting it. It is a light tissue or fabric made from single threads, the openings or meshes between them being formed by twisting the threads round pins. The work-bench, if we may use the term, is generally an oval plate, stuffed and covered so as to form a cushion or 'pillow;' and this is placed either on a table or on the lap. On this pillow a stiff piece of parchment is placed, and holes are pricked through the parchment in any desired form. Through these holes pins are stuck into the pillow. The threads with which the lace is formed are wound upon small bobbins; and from these bobbins the threads are woven around the pins, and twisted round each other in various ways, so as to form a pattern. The formation of the meshes may be described thus:—Suppose a number of ropes to be laid parallel, each consisting of two or three threads twisted round each other, but at every two or three spiral turns the threads composing one rope are twisted around those of its neighbour, and then return to be twisted with its own; this, being done with the whole of the threads, forms the meshwork or ground of the whole piece. The shape or figure of the meshes depends upon the number of turns which are made before the threads of one rope are twisted round those of the adjoining one. In the making of lace these various twistings are effected either by twisting the threads round the pins, or twisting the bobbins round each other. What we have been here describing is the mode by which the meshes or plain groundwork are produced. The lace is, however, ornamented by a thread, much thicker than that forming the net, which is woven or knitted in among the meshes in the form of flowers and other tasteful designs. The value of the lace principally depends on the elegance and completeness of these worked devices.

These are the outlines of all the methods; but the minutiæ were and are different in different places. It is believed that the first ever made in England was that denominated *Brussels point*, of which the network or ground is made by the pillow and bobbins, and the pattern and sprigs worked with the needle. The distinguishing features of the principal foreign laces are said by Mr. Slater (M'Culloch's 'Dict.') to be as follows:—*Brussels ground*: an hexagonal or six-sided mesh formed by platting and twisting four threads of flax to a perpendicular line of mesh. *Brussels wire-ground*: this is made of silk; the meshes are partly straight and partly arched, and the pattern is worked separately by the needle. *Mechlin*: an hexagonal mesh formed of three flax threads twisted and platted to a perpendicular line; the pattern is worked in the net. *Valenciennes*: the mesh is an irregular hexagon formed of two threads, partly twisted and platted at the top of the mesh; the pattern is, as in the Mechlin lace, worked in the net. *Lisle*: this has a diamond-shaped mesh, formed of two threads platted to a perpendicular line. *Alençon*: an hexagonal mesh of two threads, twisted like the generality of Buckingham lace, and considered inferior to most of the preceding. *Alençon point*: formed of two threads to a perpendicular line, with octagonal and square meshes alternately.

Our former article on bobbin-net contains as much information as it may be necessary to give respecting the rise and present state of that branch of industry. We may, however, say a few words as to the mode of manufacture. In weaving plain materials, such as calico, the rows of weft-thread cross the rows of warp-thread at right angles, interlacing one among another in a regular manner, the cross-thread passing over one and under the next of the long threads; in *twilled* materials the cross-thread (or weft) passes over one, and under two, three, or four of the warp-threads, thus giving a kind of ribbed appearance. But in making bobbin-net the adjoining threads are made to twist round each other by the intervention of *two* weft or cross threads. The machine by which this twisting and interlacing are effected is one of the most beautiful pieces of mechanism that the cotton-manufacture presents, but it is too elaborate to be described here. We may, however, show the principle on which the meshes are formed, by the aid of the following cuts.

Fig. 1 represents what would result if the perpendicular threads were of inflexible wire; and *Fig.* 2 the effect produced when they are, as in practice, of flexible fibres. In each case the perpendicular threads, which indeed form the *warp*, may be traced from top to bottom. One of the weft-threads descends diagonally from right to left, and then, after forming a *selvage* or edge, descends from left to right; while at the same time the other weft-thread descends diagonally first from left to right, and afterwards from right to left. The weft-threads twist round the warp-threads at the sides of every mesh, and cross each other at the top and bottom of every mesh.

The net produced by machinery obtains different names, according to the mode in which it is made. There were some years ago *two-plain net*, *square or tuck-notted net*, *fish-mesh net*, *platted net*, &c.; but at present the kinds produced in England are *point-net*, *warp-net*, and *bobbin-net*; these names are derived, not from their peculiarity either in appearance or in use, but from the sort of machines with which they are made. The *quillings*, or

narrow strips of net, are made in broad sheets or widths, being connected together merely by a single thread, which is afterwards drawn out. The meshes in machine-made net vary from about twenty to thirty-six in an inch. The French are accustomed to make a kind of silk net called *single press point*: when this is plain it is called *tulle*, and when ornamented *dentelle*.

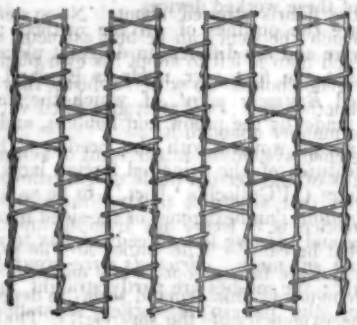

Fig. 1.

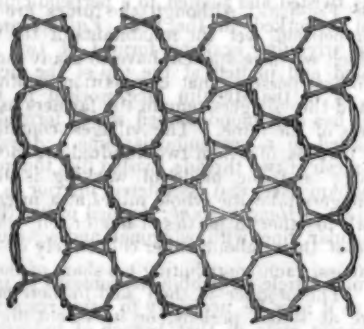

Fig. 2.

THE TURQUOISE.

Tubal.—One of them showed me a ring, that he had of your daughter for a monkey.

Shylock.—Out upon her! Thou torturest me, Tubal: it was my turquoise; I had it of Leah, when I was a bachelor: I would not have given it for a wilderness of monkeys.

Merchant of Venice, Act iii., Scene 1.

In a note on the above passage in the Pictorial edition of Shakspere, it is remarked that "the turquoise, turkise, or turkey-stone, was supposed to have a marvellous property, thus described in Fenton's 'Secret Wonders of Nature,' 1569:—'The turkeys doth move when there is any peril prepared to him that weareth it.' Ben Jonson and Drayton refer to the same superstition."

This gem, the turquoise, is as remarkable for the uncertainty long felt concerning its history, as for the superstition above alluded to. It possesses a beautiful blue or greenish-blue colour, and a texture susceptible of receiving a high polish; it has been ranked as a precious stone from an early period, but much discussion has arisen concerning its origin and nature. De Boodt and Dr. Woodward considered the *callaïs* of Pliny to be the turquoise; and Woodward further supposed it to be nothing else but fossil ivory tinged with copper. But there have been long known two different kinds of the turquoise, one called turquoise of the *old rock*, and the other turquoise of the *new rock*. A distinction has also been known between *oriental* and *occidental* turquoises.

Very contradictory accounts of these different kinds used to be given: some writers said that the "old and new" rocks were two mountains in Persia, from whence the gems were procured; while others said that the term "old" related to a Persian mine, and the term "new" to mines in France, and other places of western Europe; and that this distinction was equivalent to that of "oriental" and "occidental." Tavernier gave some account of the Persian mines in 1681; Reaumur described those of France in 1715; and Dr. Mortimer published a paper on the subject generally, in the 'Philosophical Transactions' for 1746. But still there was a great deal of doubt enveloping the subject; for while some authors spoke of the turquoise as being a fossil bone or tooth of some extinct animal, others were equally certain that it was a proper mineral body, totally unconnected with anything having possessed animal life.

It was not until the present century that the matter was placed on its right basis. Some distinguished mineralogists, particularly Professor Fischer of Russia, analyzed various specimens; and the result arrived at was, that there are two substances to which the name of turquoise is attached, the one of animal origin, and the other a mineral: that the *new rock* or *occidental* turquoise was of the former class, and was to be procured in various parts of France, Switzerland, Bohemia, and Siberia; while the *old rock* or *oriental* turquoise was a true mineral, brought from Nishapore in Persia; that the latter was the *Calaïte* of Pliny, and is to be considered as the true turquoise, which has been supplied from Persia from a remote period.

Fischer published, in 1816, an 'Essai sur la Turquoise,' in which he minutely describes these two kinds of turquoise. The true gem is an argillaceous substance, coloured principally by oxide of copper, and occurs sometimes in rounded masses, at others in layers, and at others in veins. When broken it has a lustre something resembling that of wax, but is susceptible of receiving a high polish; it is an opaque gem, being only slightly translucent near the sharp edges; in hardness it is a little inferior to quartz; and in weight, or specific gravity, about three times as great as water; about three-fourths of its whole weight consist of argil, the remainder consisting of oxides of copper and of iron, and water. Fischer has distinguished it into three species, the *Calaïte proper*, the *Agaphite*, and the *Johnite*, according to certain mineralogical differences. The 'oriental' turquoise is worn as a gem in diadems, bracelets, &c.; and also, particularly among the Persians, as decorations for the handles of knives, the hilts of swords, &c.: it also constitutes one of the amulets or talismans of the Asiatics. Fischer speaks of a noble turquoise in the collection of M. Weyer, a jeweller of Moscow; it consists of a thin plate of an exquisite colour, attached to the matrix or bed in connection with which it was originally found, and shaped into the form of a heart. It is said to have been once a talisman belonging to Nadir Shah of Persia, and to contain a verse of the Koran beautifully engraved on the surface: it was purchased at Mushed in Khorasan, and M. Weyer demanded five thousand roubles for it. (A Russian rouble is worth about 3*s.* 3*d.* English.)

The inferior, 'new rock' or 'occidental' turquoise, called also the turquoise odontolithe, is, as has been said, a fossil production. It is a disputed question whether these turquoises are in every case the *teeth* of an animal, or whether any other portion of the skeleton has been so designated. Bone is susceptible of being penetrated by metallic oxides, which will impart colour to it; but it seems probable that the teeth alone possess that degree of hardness necessary for them to pass as gems. Swedenborg has given a representation of a whole skeleton of a quadruped, which had become coloured by oxide of copper; but for the reason just stated, Fischer concludes that it is the teeth only which are known as turquoises. A specimen, analyzed by Bouillon-Lagrange, consisted of phosphates of lime, of iron, and of magnesia, and carbonate of lime, the phosphate of lime amounting to four-fifths of the whole weight. Nothing satisfactory is known as to what kind of animal these teeth once belonged: the *mastodon* of Cuvier is mentioned as the most

probable. These fossil teeth, whatever may be their nature, are found principally near the town of Simore in Lower Languedoc, and were first made known in 1628 by Guy la Brosse; and from Reaumur's account it would seem that they are not found in the blue state, but are made so by heat. "Our turquoises are naturally whitish or yellowish, of a colour something like that of our building stones; but if they are exposed for some time to the action of fire, far from becoming whiter, they take a blue colour." This seems to be supported by an experiment of Professor John at Moscow, in which he converted the tooth of a mammoth into a kind of turquoise by means of a blow-pipe.

It thus appears that the only kind of turquoise which can rightly be called a gem is the true mineral brought from Persia; and this is further borne out by the fact that the very finest tooth-turquoises will not bring half the price of the mineral turquoise: it may indeed in some degree be considered as an artificial substitute for the true gem. We shall now, therefore, dismiss this substitute, and pay a visit to the turquoise mines of Khorasan. Very few Europeans, at least such as are capable of accurately describing what they have seen, have visited that country. Professor Agaphi of Moscow visited the mines during an overland journey from India to Russia in the early part of the present century, but by far the fullest description of them has been given by Mr. Baillie Fraser, who visited Khorasan in 1821.

Khorasan is situated at the south-east of the Caspian Sea, a sandy desert separating it on the north from Khiva, of which we have recently treated, and the scene of some recent operations on the part of the Russians. In a mountainous district, situated about forty miles westward of the town of Nishapore, are the turquoise mines. Only one of the hills has yet been found to contain turquoises, and near it have been built two villages, inhabited by the miners, and called respectively *old Madan* and *new Madan*, "madan" being the Persian word for a "mine." There are six mines in the hill: 1st, the Khooroosh mine; 2nd, the Madan-e-siah, or black mine; 3rd, the Aubee mine; 4th, the Cummeree mine; 5th, the Abdool Kezakee mine; 6th, the Kaur-e-suffeed, or white cavern.

The first mine is not very productive of fine gems. There is a bed of light grey porphyritic earth, which is turned over and over by the miners; and bits of the turquoise are found attached to fragments of porphyritic rock. The second mine consists of porphyritic rock deeply tinged with iron, and having little veins of the blue turquoise matter pervading it in every direction, but chiefly between the laminæ of the rock. Several small pieces of the gem are seen adhering to the rock; and in some places the turquoise matter seems to have bubbled out from the rock in the form of little pimples of an exquisite colour. The third mine is now unworked, although it appeared to Mr. Fraser that there was still abundance of turquoise matter contained in it. A white saline efflorescence, said by the natives to be alum, was seen covering a part of the face of the rock of this mine. The fourth mine consists principally of two deep excavations in a solid dark-brown rock, through which the turquoise matter is disseminated in small veins: one of these pits had stopped working on account of having filled with water; for the miners appear to be ignorant of the means of obviating that difficulty. The fifth mine, which is the principal of the group, is situated near the summit of the hill: here, as in the former cases, turquoise matter pervades a porphyritic rock; but it is also found, in an imperfect state, in a yellow ochreous clay. In this mine the turquoise occurs in all the various forms which it presents, viz., in tolerably symmetrical nodules of different sizes; in narrow veins pervading the rock; and in irregular masses, generally of inferior quality. The sixth mine is now very little worked, probably on account of the comparative exhaustion of its valuable contents.

The mines are worked in an exceedingly slovenly manner, without any order or regularity. No shafts, chambers, or galleries are formed; but the men dig just where they think the rock is richest, and leave the rubbish where it was, blocking and encumbering the way. Sometimes, with picks and hammers, they knock away large pieces of the rock, get out the turquoise how they can, and leave the débris strewed about. No system is laid down by which the gem can be best extracted from the rock, but each man is left to adopt his own plan. If an excavation gets choked up with rubbish, they leave it, and go to another spot; and if it gets filled with water, they in like manner abandon it.

This wretched system, or rather want of system, is one of the results of the Persian mode of government, which is so defective, that, according to Mr. Fraser, the constant Persian practice is, "Every one lives for himself, and snatches what he can." The mines are the property of the crown, and are farmed out to any one who will give the price demanded: this demand seems to depend generally on the exigencies of the sovereign. The sum demanded for the year 1821 was stated by Mr. Fraser at about 2700*l.* English. Although the mines are offered for open competition, yet the inhabitants of the two villages of which we have spoken have so many more facilities than others possess, that competition against them is useless, and the villagers remain the farmers as well as the labourers of the mine. The villages contain about a thousand persons, of whom two hundred are men in the prime of life; and the mode of working is this: one hundred villagers take the whole mines at a price agreed on, and work together in parties of five or ten, who divide the produce of their labour either collectively or by these separate parties, each contributing his share of the rent of the mines. The produce is then sold to merchants who resort there at stated periods, or it is sent for sale to Mushed, the principal town in the neighbourhood.

The turquoise is sold by the miners in three different states: 1st, single stones, freed from the parent rock, and ground so far as to expose the size, shape, and colour; and the merchant and the miner come to a bargain according to its excellence in these particulars. 2nd, Stones freed from the principal part of the parent rock, but not all; and the purchase of such is a kind of lottery, for it is only here and there that the merchant can see the quality of the stone imbedded in the pieces of rock. 3rd, Masses, in which the parent rock is but loosely knocked off, so that it is still more a chance what may be the quality of the turquoises within: a mass of such stones is sold by weight.

Most of the produce is carried to Mushed, where many stone-cutters reside: there are several caravanserais wholly occupied by dealers in the gems, who employ artisans to work them into various forms. The mode of working is this:—a wheel covered with gum-lac and sand, mixed while the first is in a state of fusion, from a quarter to one-third of an inch thick, is turned rapidly by a bow and string fitted to its axle; a broad hoop of thin wood fixed, but concentric with this wheel, retains the spatterings of sand and water thrown off in its rapid revolutions; the whole is fixed to a board, which may be moved at pleasure, and behind it sits the workman, who gives the degree of polish required by using wheels of different fineness: the gem is held in the hand, and ground and polished on the surfaces of the wheels.

The gems, which are mostly worked up into the form of rings, are then sorted, and conveyed to different countries. The finest qualities generally find their way to India, by way of Herat and Candahar. The next are conveyed westward to Persia and Turkey; or else go to Bokhara, where they are sold to merchants trading to Russia, by which they gradually find their way to Europe. The less perfect, considered as mere gems, sell for a much lower price, on account of their being frequently covered

with small white specks; but with the Arabs this is no disadvantage, for they value the turquoise chiefly for its reputed talismanic qualities; and they seek for large pieces, without particular reference to purity of colour. The stones intended for amulets are usually set in small rings of plated tin.

FOREIGN SCHOOLS OF DESIGN.

THE establishment of Schools of Design in this country may, in the progress of time, so materially increase our commercial prosperity, and so improve and elevate our national taste, that it is of importance to know, with some degree of accuracy, the principles, and to be tolerably well acquainted with the practice, that can best develope the capabilities of such institutions. To acquire the requisite information, Government has, within the last two or three years, caused personal inquiries to be made into the state of such schools on the Continent, from whence the idea of our own at Somerset House was borrowed. The result is the Report now lying before us.*

In Prussia, it appears the Schools of Design form a portion of the general system of art-education, that again being intertwined with the grand scheme of national education. The schools for art-education are divided into three classes:—1, elementary; 2, schools for artisans; and 3, academical in the schools of fine art. Under the words 'fine art' every species of decorative design, whether for manufacture, or for the loftier purposes of poetry, painting, &c., is included; and consequently, the only difference observable in the education of the individuals intended for these branches, consists in the less or greater extent to which that education is carried. In accordance with this principle, the Royal Academy of Berlin includes within its classes students of both kinds, whom it considers alike artists. All the inferior schools in Prussia for art-education may be said to radiate from this Academy as from a common centre, for all they teach is but the amplification of the studies of its classes. In Bavaria there is no separate system of art-education, no separate school of design, but in every portion of that system provision is made for the cultivation of artistical taste and skill; and with reference not only to the future pursuit of the individual, but also to the particular branches of industry for which artistical designers may be required in any particular locality. In France, art-education, although very extensively diffused, appears to be under no central superintendence; neither does it appear to be combined into any organised system; but its schools are numerous, and some of them are so admirably managed as to present altogether the nearest approximation to those which appear the most suitable for our own country. We may particularly mention that of Lyons. This is a school of fine art, with the study of designs for the staple manufacture of the town, silk, attached; and to promote the prosperity of this manufacture is evidently the chief object of the school—for of the annual cost, 28,500 francs, no less than 25,480 are paid by the town of Lyons, and only 3100 by the government. In the choice of pupils also, it is observable that the preference is always given to the children of merchants and manufacturers, who are destined to the manufacture of silk. Therefore, although all students who enter the school pursue studies calculated to make them artists in the higher sense of the word, it is evident that the object sought by this arrangement is to produce first-rate designers for industry. The pupils commence by making outlines, first, of parts separately, and then, as they advance, of the whole human figure; and it is not until they have completed their exercises, by being able to draw and paint the figure from the antique and living model, that they are called upon to decide whether their future pursuits will be directed towards designs for industry or for fine art. If the former, they then pass through the classes of architecture and ornamental design; then the classes of loom manufacture and of the painting of flowers from copies and from nature. In the study of designs for silk, one year is occupied in connection with ancient ornament, arabesques, &c., accompanied by exercises in designing original compositions. The flower-painting class lasts two years, and the class of the theory of manufacture an indefinite period. In this school there is comprised:—

"1st, The general study of design.

"2nd, The study of the process and reproductive capabilities of the manufacture to which design is to be applied: and

"3rd, The study of the particular species of art rendered necessary by the conditions which these impose upon the artist."

If to such a school as that here described we suppose the study of manufactures *generally* (with preference, of course, to those which are of the greatest importance to us) to be attached, we shall in all probability have before us the best model for the construction of our own School of Design at Somerset House, and of the numerous branches which it is to be hoped will spread from it through every part of the country. It may be thought that much more than is requisite is here provided for the education of the industrial artist, and that the consequence must be the production of a great number of mediocre painters, sculptors, &c. But there are various checks in the way. The profits of a skilful designer of manufacture in France are greater than those of a second-rate artist, and his talent is highly esteemed. As Mr. Dyce also justly observes:—"Were the capability of drawing the human figure as common as that of reading and writing (which, in France, it may be said to be), we should no more than the French do think of identifying the former with the genius necessary for the practice of fine art, than we should suppose the latter must inevitably lead to deluge the world with poetry." On the other hand, as to the benefits derived from so liberally educating the industrial artists, it is sufficient to point to the great and highly favourable influence exercised by them in France over all the branches of manufacture with which they are connected, and, through them, over the national taste. In Lyons, the commercial value of that (in England) very uncommercial article Taste is so high, that a house will take a young man who exhibits more than ordinary powers into partnership, in order to monopolise his services; and so entire is the confidence reposed by the French manufacturer in his designer, that he frequently does not see the patterns till they appear in the silk. With us, at present, there is little or no estimation of such abilities, and consequently no sufficient opportunities offered for its production. Yet, in spite of this, at least as much is spent in connection with patterns by English manufacturers as by French; "the difference is, that the money which in France is paid directly to the artist, is in England frittered away on expedients for superseding the employment of original designers; expedients which, if law and honesty are to be taken into account, cannot be reckoned other than illegitimate, and which, if prudent, must, I fear, be thought very short-sighted, because the great bulk of patterns executed in England according to the present system must inevitably want the stamp of novelty and originality, which is not only the great characteristic of the French, but is really the advantage which the French manufacturer gains by paying liberally for the assistance and judgment of highly educated artists."†

Besides the class of designers whom it is the especial object of the schools in question to produce, it ought to endeavour to diffuse some degree of artistical knowledge

* 'Report made to the Rt. Hon. C. Poulett Thomson, M.P., &c., President of the Board of Trade, on Foreign Schools of Design for Manufactures,' by William Dyce, Esq.

† 'Report,' p. 35.

among the very numerous bodies of workmen engaged in labours requiring a certain amount of taste. In the foreign schools this is done on an admirable principle, which, whilst it inculcates the necessity of educating designers as if they were to become workmen, educates workmen as if they were to become designers. The incapacity of English workmen is severely felt in the execution of coloured fabrics. It is a common custom to vary patterns extensively by altering the arrangement and quality of the colours. This, evidently, an artist alone can do with propriety; but not only are artists never employed, but the manufacturer, to whom nominally belongs the superintendence of this delicate point, leaves it to ignorant workmen, who, having no independent mode of thought upon such subjects, follow an established rule, however opposed to good taste the results may be. "A few years ago, a French manufacturer of paper-hangings came to this country with the intention of commencing business. To ensure his success, he brought with him a skilful designer of patterns, believing that, with the advantages he should enjoy in other respects, he had only to superadd the quality of excellent design (in which English papers are lamentably deficient) to drive all competitors out of the market. He engaged English workmen, and commenced operations. His designer, accustomed to the French method, was of course not content with having merely finished the pattern; he considered that half of his vocation consisted in seeing that no injury was done to the character of his designs through the unskilfulness of the workmen: with this view, he insisted that the tints employed should exactly correspond to those of his design; and that, if the colouring were to be changed, the alteration should be according to his judgment. Could anything be more reasonable? But what was the result? The workmen struck work: they had been accustomed to make up their tints in large quantities; they had never used but three greens, or two reds, or two yellows, and so on; there were only certain changes in the arrangements of the colours which they were in the habit of making, and it was absurd to suppose that they should submit to the caprice of a Frenchman, who seemed to think there were as many colours as days in the year, and who insisted upon many minute variations of tint, of which they could see no use, and which were not employed in the trade. The concern was accordingly broken up."* This very manufacture of paper-hangings shows strikingly the injury resulting to our commercial prosperity from the want of artistical designers. Half a century ago, France was supplied with paper from England to a large amount, and the names of the artists who then gave the manufacture its high reputation have been preserved. Now France receives little or nothing of this kind from us, whilst we are indebted to that country for whatever novelty or beauty of design the paper in the shops of the metropolis exhibit.

With respect to our own School of Design, the Report considers it indispensable that, with the study of design generally, two at least of our principal articles of industry, the silk manufacture and the calico-printing, should be taught practically; and in teaching these, other branches of industry are in effect taught at the same time, for those two are the types of every species of weaving and printing. Instead of commencing with the human figure, it is advised that the study of ornament, flowers, &c. should have the priority, in order that those individuals whose pursuits really would be but very slightly benefited by a knowledge of the former, might not be compelled to study it. In this case, however, it would be necessary, in order to preserve the school for its chief object—the production of industrial designers—to make the previous study of ornament an indispensable condition of admission into the classes of the human figure. At the opening of the school at Somerset House, it was proposed that the qualification for admission should be considerable proficiency in drawing. This Mr. Dyce thinks inexpedient, as there are at present no elementary schools of design to prepare pupils for a higher stage. We conclude with the following observations from the Report, which appear to us as important as true. "We shall take a very narrow view of the operation of the foreign schools, if we suppose their influence on manufacture to be due solely to that part of their organization which has an immediate bearing on industry; or that by making the Government school more perfect in that respect than the continental establishments, any approach to the amount of good effected by the latter will be made, without the same liberal employment of the collateral aids of elementary instruction, and other means of cultivating popular taste. In matters of taste, it is no otherwise than in commerce, the production must always depend upon and bear an exact proportion to the consumption; it is therefore not less necessary to create the demand for tasteful design in industry than it is to provide for its exercise. The more expensive articles of commerce will always find purchasers, so long as wealth and its concomitant advantages of education and cultivated taste exist; but it is not among the wealthy, or in the more costly productions of industry, but among the less opulent classes of the community, and in the every-day supplies and consumption of the market, that the real character of national taste is discernible; and the standard of this, as it appears to me, can only be raised by informing the minds of those who are to become the purchasers, as well as cultivating the talent of those who are to supply the things purchased. Every one admits that the great evidence which we find in France of the knowledge and love of art in the cheaper kinds of manufacture is due to the ample opportunities of study provided for the common people."

* 'Report.

THE MUSQUASH, OR MUSK-RAT.

Musquash, the Cree name for the *Fiber Zibethicus* of Cuvier (*Ondatra* of Lacépède), is a genus belonging to the family *Castoridæ*.

In a tract which has for its title 'A Perfect Description of Virginia,' 1649, we find among the "Beasts great and small," "Muske Rat, so called for his great sweetnesse and shape."

The head is short. Body thick and rather flat; legs very short; hind-feet large, not webbed.* Dark umber brown above; sides, anterior part of belly, middle of breast, lateral part of neck and cheeks, shining yellowish-brown; chin, throat sides of the chest, and posterior part of the abdomen, ash-grey; tail compressed, convex on the sides, with its acute edges in a vertical plane, covered with a thin sleek coat of short hairs, which allow a number of small roundish scales, well separated from each other, and which, as well as the hair, are dusky-brown, to appear through them; acute margins of the tail (which is rather thicker in the middle than at the root, and tapers gradually from its middle to its extremity, which is not acute) covered with a close line of longer hairs dark brown on the upper edge and soiled white on the under one. Length of head and body, 14 inches; of the tail, 8 inches 6 lines.

The fur, which much resembles that of the *Beaver*, but is shorter, resists the water during the life of the animal, but is easily wetted immediately after death.

Charlevoix states that the Musk-Rat takes the field in March, at which time its food consists of bits of wood, which it peels before it eats them. After the dissolving of the snows, he says that it lives upon the roots of nettles, and afterwards on the stalks and leaves of that plant. In summer it feeds on strawberries, &c., to which succeed

* Hearne erroneously says that the hind-feet are webbed.

the autumnal fruits. During this time, he states that the male and female are rarely seen asunder. According to the same author, they separate in winter, when each takes up its lodgings apart, in some hole or in the hollow of a tree, without any provision; and the Indians declared that not the least morsel of anything is eaten by them whilst the cold continues. "They likewise," adds Charlevoix, "build cabins nearly in the form of those of the beavers, but far from being so well executed. As to their place of abode, it is always by the water-side, so that they have no need to build causeways. . . . The flesh is tolerably good eating, except in the time of rut, at which season it is impossible to cure it of a relish of musk, which is far from being as agreeable to taste as it is to the scent."

Dr. Richardson (*Fauna Boreali-Americana*), from whom the abridged description is taken, and to whose details we refer the reader, states that the Musquashes vary considerably in size, and that though they have a strong musky smell, particularly the males, in spring, their flesh, which somewhat resembles flabby pork, is eaten by the Indians, who prize it for a time when it is fat, but soon tire of it. They have, according to this author, three litters in the course of the summer, producing from three to seven at a litter, in 55° N. lat., and begin to breed before they attain their full growth. Great numbers are destroyed by the inundations which cover the low grounds where they haunt, and in severe winters they are almost extirpated from some localities by the freezing of the swamps inhabited by them. Famine in such cases drives them to destroy each other. A great mortality, the cause of which is unknown, also sweeps them away, and the deaths at such periods (which are uncertain) are so numerous, that a fur-post, where the *Musquash* is the principal return, is not unfrequently abandoned till the fecundity of the animal has repaired, which it does in a very few years, the ravages of disease.

Dr. Richardson places the southern limit of the *Musquash* about 30° N. lat. According to Bartram they are found in the north of Georgia and Florida, and Dr. Richardson ascertained that they extended northwards to the mouth of the Mackenzie, 60° N. lat. Small grassy lakes or swamps, or the grassy borders of sluggish streams with muddy bottoms, are favourite haunts, and there they feed chiefly on vegetables. In the northern districts the roots and shoots of the bulrush and reed-mace, and the leaves of various carices and aquatic grasses, form their staple. Pennant states that they are very fond of the Sweet-flag (*Acorus Calamus*), which, according to Dr. Richardson, does not grow to the northward of Lake Winnipeg. The last-named author often saw small collections of fresh-water mussel-shells (*Unio*), on the animals of which they are said to feed, and which, he was informed, had been left by him.

The habitations of the musquashes and the mode of hunting them are thus described by the Doctor:—"In the autumn, before the shallow lakes and swamps freeze over, the musquash builds its house of mud, giving it a conical form, and a sufficient base to raise the chamber above the water. The chosen spot is generally amongst long grass, which is incorporated with the walls of the house, from the mud being deposited amongst it, but the animal does not appear to make any kind of composition or mortar by tempering the mud and grass together. There is however a dry bed of grass deposited in the chamber. The entrance is under water. When ice forms over the surface of the swamp, the musquash makes breathing-holes through it, and protects them from the frost by a covering of mud. In severe winters however these holes freeze up in spite of their coverings, and many of the animals die. It is to be remarked that the small grassy lakes selected by the musquash for its residence are never so firmly frozen nor covered with such thick ice as deeper and clearer water. The Indians kill these animals by spearing them through the walls of their houses, making their approach with great caution, for the musquashes take to the water when alarmed by a sound on the ice. An experienced hunter is so well acquainted with the direction of the chamber and the position in which its inmates lie, that he can transfix four or five at a time. As soon as, from the motion of the spear, it is evident that the animal is struck, the house is broken down, and it is taken out. The principal seasons for taking the musquash are, the autumn, before the snow falls, and the spring, after it has disappeared, but while the ice is still entire. In the winter time the depth of snow prevents the houses and breathing-holes from being seen. One of the first operations of the hunter is to stop all the holes, with the exception of one, at which he stations himself to spear the animals that have escaped being struck in their houses and come hither to breathe. In the summer the musquash burrows in the banks of the lakes, making branched canals many yards in extent, and forming its nest in a chamber at the extremity, in which the young are brought forth. When its house is attacked in the autumn, it retreats to these passages, but in the spring they are frozen up. The musquash is a watchful but not a very shy animal. It will come very near to a boat or canoe, but dives instantly on perceiving the flash of a gun. It may be frequently seen sitting on the shores of small muddy islands in a rounded form, and not easily to be distinguished from a piece of earth, until, on the approach of danger, it suddenly plunges into the water. In the act of diving, when surprised, it gives a smart blow to the water with its tail."

Varieties.—Dr. Richardson records three varieties besides that above described.

1. The *Black Musquash*, rare.

2. The *Pied Musquash*, with dark blackish-brown patches on a white ground.

3. The *White Musquash* (*Fiber Zibethicus-albus*, Sabine). This albino is not unfrequent. Dr. Richardson saw several.

According to Hearne, the musquash is easily tamed, soon becomes attached, and is cleanly and playful.

The fur is used in hat-making, and there is, according to Dr. Richardson, an annual importation of between four and five hundred thousand into Great Britain from North America for that manufacture. Charlevoix also notices the employment of the fur in the hat-trade.

[The Musquash.]

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

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